



Designation: D6988 – 21

## Standard Guide for Determination of Thickness of Plastic Film Test Specimens<sup>1</sup>

This standard is issued under the fixed designation D6988; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon ( $\epsilon$ ) indicates an editorial change since the last revision or reapproval.

### 1. Scope

1.1 This guide covers the determination of the thickness of plastic films where the thickness is used directly in determining the results of tests for various properties. Use this practice except as otherwise required in material specifications or in applicable test standards.

NOTE 1—Film is defined in Terminology D883 as an optional term for sheeting having a nominal thickness no greater than 0.25 mm (0.010 in.).

NOTE 2—Alternative methods are acceptable if they meet the requirements of measurement precision as noted in this guide.

NOTE 3—This guide is not intended to address the sampling techniques or the measurement of film thickness for the commercial classification of commercial products or for quality control purposes.

1.2 The values stated in SI units are to be regarded as the standard.

1.3 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

NOTE 4—This standard and ISO 4593 address the same subject matter but differ in technical content.

1.4 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

### 2. Referenced Documents

#### 2.1 ASTM Standards:<sup>2</sup>

D618 Practice for Conditioning Plastics for Testing

D883 Terminology Relating to Plastics

D5947 Test Methods for Physical Dimensions of Solid Plastics Specimens

<sup>1</sup> This guide is under the jurisdiction of ASTM Committee D20 on Plastics and is the direct responsibility of Subcommittee D20.19 on Film, Sheeting, and Molded Products.

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<sup>2</sup> For referenced ASTM standards, visit the ASTM website, [www.astm.org](http://www.astm.org), or contact ASTM Customer Service at [service@astm.org](mailto:service@astm.org). For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

D6287 Practice for Cutting Film and Sheeting Test Specimens

2.2 ISO Standard:

ISO 472 Plastics—Vocabulary<sup>3</sup>

### 3. Terminology

3.1 *Definitions*—See Terminologies D883 and ISO 472 for definitions pertinent to this guide.

3.2 *Definitions of Terms Specific to This Standard:*

3.2.1 *absolute uncertainty (of a measurement)*,  $n$ —the smallest division that can be read directly on the instrument used for measurement.

3.2.2 *calibration*,  $n$ —the set of operations that establishes, under specified conditions, the relationship between values measured or indicated by an instrument or system, and the corresponding reference standard or known values derived from the appropriate reference standards.

3.2.3 *dead-weight micrometer*,  $n$ —an instrument capable of measuring the thickness of thin films utilizing a weight to apply uniform pressure to the specimen.

3.2.4 *verification*,  $n$ —proof, with the use of calibrated standards or standard reference materials that the calibrated instrument is operating within specified requirements.

### 4. Summary of Methods

4.1 This guide describes four different methods for the thickness measurement of plastic film specimens. The methods (identified as Methods A, B, C, and D) use different micrometers that actuate the weights in different manners or utilize different means of reading the thickness.

4.2 It is permissible to use other instruments, including non-contact instruments and instruments using alternative readout systems in place of dials provided they meet or exceed the precision requirements noted in this practice.

### 5. Significance and Use

5.1 This guide is intended to provide recommendations and suggested good practices to determine precise dimensions when necessary for the calculation of properties expressed in

<sup>3</sup> Available from American National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036.